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INTRODUCTION.

This REVIEW is based on reports for July, 1893, from 3,126 regular and voluntary observers. These reports are classified as follows: 163 reports from Weather Bureau stations; 44 reports from United States Army post surgeons; 2,113 monthly reports from state weather service and voluntary observers; 31 reports from Canadian stations; 210 reports through the Southern Pacific Railway Company; 565 marine reports through the co-operation of the Hydrographic Office, Navy Department; marine reports through the "New York Herald Weather Service"; monthly reports from local services established in all states and territories; and international simultaneous observations. Trustworthy newspaper extracts and special reports have also been used.

CHARACTERISTICS OF THE WEATHER FOR JULY, 1893.

The month was cooler than usual over the interior of the middle Atlantic and New England states, over the Florida Peninsula, from the west Gulf coast to the lower Missouri valley, and from the Pacific coast over west portions of the plateau region. In the Ohio and middle and upper Mississippi valleys and the central and western lake region and thence to the south Atlantic coast, over the interior of Texas and thence to the middle Missouri valley, and from the northeast slope of the Rocky Mountains to Manitoba, the month was warmer than the average July. At stations in the Carolinas, Kentucky, and central Texas the month was the warmest July on record. Light frost was reported in northern New England on the 10th, 12th, and 22d, in western New York on the 24th and 28th, in southwestern Lower Michigan and northeastern Indiana on the 4th, and in the northern Rocky Mountain region on the 7th, 12th, and 14th.

PRECIPITATION.

The month was exceptionally dry over the greater part of the country. At stations in New England, eastern New York, North Carolina, the upper Ohio valley, south-central Tennessee, Nebraska, and on the north Pacific coast, the monthly rainfall was the least on record for July. In parts of Virginia, Alabama, and the Lake Michigan and Lake Superior regions, in the Saskatchewan Valley, and from the Missouri Valley over New Mexico, the monthly precipitation was in excess of the July average. Snow was reported at Pikes Peak, Colo., on the 2d, 25th, 26th, and 28th to 30th. The total snowfall at that station was 3.0 inches. Trace of snow was reported at Breckenridge, Colo., on the 13th, and trace was noted at Bonanza City, Idaho, on the 6th.

LOCAL STORMS.

The most disastrous storm of the month swept eastward over Cherokee, Buena Vista, and Pocahontas counties, Iowa, the evening of the 6th, killing upwards of 50 persons, and destroying property valued at about $200,000. Warning of the probable occurrence of severe local storms was telegraphed from the Weather Bureau at Washington to points throughout Iowa at 11.08 p. m. of July 5th, eighteen hours before the development of the storm above referred to.

DROUGHT.

Damaging drought prevailed in parts of the middle Atlantic and New England states, North Carolina, eastern Florida, Alabama, the Ohio Valley and Tennessee, southeastern Missouri, Arkansas, central Texas, southern Kansas, western Nebraska, southwestern South Dakota, Utah, and Idaho.

AURORAS.

The night of the 15th auroral displays were noted generally over northern and north-central portions of the country from the New England to the north Pacific coasts.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean atmospheric pressure for July, 1893, as determined from observations taken daily at 8 a. m. and 8 p. m. (75th meridian time), is shown on Chart II by isobars.

Chart V exhibits the normal distribution of atmospheric pressure and prevailing wind-directions over the United States for July. The publication of the charts of this series is preliminary to the publication by the Weather Bureau of specially prepared data and charts showing meteorological and climatic features and conditions of the United States.

In July there is usually an increase of pressure, except over extreme northeast and northwest portions of the country, the most marked increase occurring between the Mississippi River and the Rocky Mountains, where the normal pressure is .05 or more higher than for the preceding month.

In July, 1893, the mean pressure was highest over the east Gulf states and the Florida Peninsula and along the immediate Pacific coast north of the 40th parallel, where it was above 30.05, and the mean readings were above 30.00 south of the Ohio River and east of Oklahoma and Texas. The mean pressure was lowest over the Gulf of Saint Lawrence and the upper Saskatchewan valley and over the west part of the southern plateau region, where it was below 29.80, and the mean values were below 29.85 over northern Maine and on the northeast slope of the Rocky Mountains. The mean pressure was also below 29.85 from the western portion of the southern plateau region over Utah and Nevada.